

**Objective:** Understand what different types of stem cells there are, and what they can do

(Scottish curriculum: Adv Higher Biology, Cell and Molecular Biology a)iii) – the ability of stem cells to differentiate, unlike specialized cells)

## Not all stem cells are the same!

Use these words to fill in the gaps:

embryonic

brain

adult

embryo

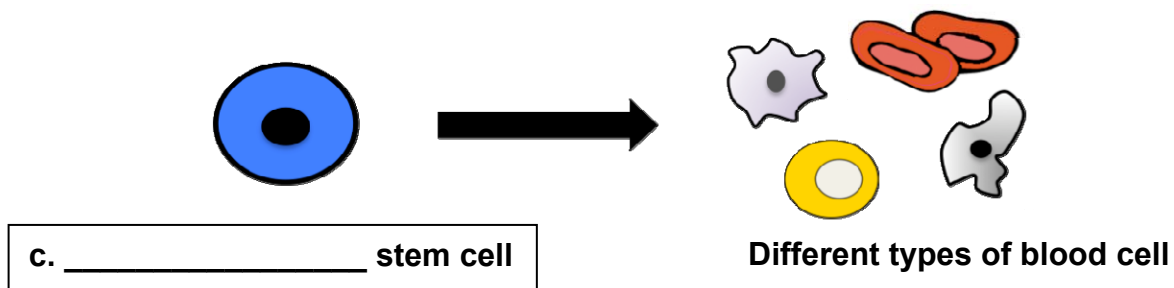
blood

You need two kinds of stem cell: **embryonic stem cells** to help you grow from a fertilized egg into a baby, and **tissue stem cells** to stay healthy once you are born.

### Tissue stem cells

You have lots of different stem cells in your body. They are hard at work every day, replacing cells that get used up, damaged or die. There are blood stem cells making blood cells, muscle stem cells making muscle cells, **a.**  stem cells making all the different types of cell in your brain, and other kinds of stem cells in the rest of your body.

The stem cells you have in your body now are called **b.**  or **tissue stem cells**. Each type stem cell in your body can only make a few other types of cell. Your brain stem cells can only make brain cells; they can't make muscle.



### Embryonic stem cells

Way back when you were still a ball of cells inside your mother's womb, you needed a very special kind of stem cell: **embryonic stem cells**. These amazing cells can make ALL the different types of cell in the body. They are only found in the very early stages of development of an

**d.** , when it is just a ball of around 100 cells.

### A new kind of stem cell

Recently, scientists have discovered a way to make stem cells from normal skin or brain cells.

These artificially created stem cells are called induced pluripotent stem cells, or iPS cells. They are just like **e.**  stem cells and can make all the different kinds of cell in the body.